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Appl. No. 09/152,266

November 12, 2003

**AMENDMENTS TO THE CLAIMS:**

Please cancel without prejudice claims 1, 20 and 21, amend claims 2, 6-9, 11-19 and add new written claims 22-41 as follows.

This listing of claims will replace all prior versions, and listings, of claims in the application:

Sub  
H.C.  
1. (Cancelled)

~~2. (Currently Amended) An integrated circuit for use as a scheduler of activities to~~  
be run on an associated processor, being of modular structure and constructed from an assembly of tiles, wherein each tile defines a building block having logic and structure, said tiles being abutted one against the other to form a two-dimensional array of  $n$  rows and  $m$  columns which ~~realises~~ realizes an overall functionality for the integrated circuit and wherein each of the ' $n$ ' rows of tiles provides the control logic for each one of ' $n$ ' schedulable activities and each of the  $m$  columns of tiles provides a particular function.

3. (Original) An integrated circuit as claimed in claim 2 comprising a further row of tiles for interfacing with an associated central processor and for generating control signals for said two-dimensional array.

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C1  
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4. (*Previously Presented*) An integrated circuit as claimed in claim 2 in which the control logic includes means for holding control variables corresponding to each of said activities and next-activity selection logic for identifying those activities which are ready for running on the processor, depending on the status of said control variables.

5. (*Original*) An integrated circuit as claimed in claim 4 in which the control variables include at least one "stim-wait" channel.

~~6. (*Currently Amended*) An integrated circuit as claimed in claim 12 including~~  
means for setting those control variables comprising a "stim-wait" channel in response to a signal received from an associated processor.

7. (*Currently Amended*) An integrated circuit as claimed in claim 12 including means for setting those control variables comprising a "stim-wait" channel in response to a signal received from an associated peripheral device.

8. (*Currently Amended*) An integrated circuit as claimed in claim 12 including means for setting those control variables comprising a "~~stim-wait~~stim-wait" channel in response to a signal received from a second integrated circuit ~~as described and claimed herein.~~

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9. (*Currently Amended*) An integrated circuit as claimed in claim 12 including means for temporarily inhibiting any changes to control variables from entering the next-activity-selection logic.

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10. (*Previously Presented*) An integrated circuit as claimed in claim 2 and incorporating decoding and encoding logic for routing signals, identifying one or more of said 'n' activities, between the associated central processor and the appropriate row of tiles.

11. (*Currently Amended*) An integrated circuit as claimed in claim 12 in which the next-activity-selection logic includes means for selecting the next activity to be run on a round robin basis.

12. (*Currently Amended*) An integrated circuit as claimed in claim 12 in which the next activity selection logic includes means for allocating differing priority levels to groups of activities, and for selecting the next activity to run within a group on a round robin basis within that group.

13. (*Currently Amended*) An integrated circuit as claimed in claim 12 and including means for detecting when a schedulable activity has a higher priority than that

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activity currently running on an associated central processor and thereby generating an interrupt signal.

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14. (Currently Amended) An integrated circuit as claimed claim 12 and incorporating a counter circuit.

15. (Currently Amended) An integrated circuit as claimed claim 12 configured for asynchronous operation, by incorporating level-driven, clock-free ripple logic.

16. (Currently Amended) An integrated circuit as claimed in claim 12 and being fabricated using CMOS techniques.

17. (Currently Amended) A processing network comprising a central processing unit for running a plurality of activities and a scheduler of activities linked to the processing unit via a data bus in which said scheduler comprises an integrating circuit in accordance with any of the preceding claims responsive to an activity scheduler as in claim 22.

18. (Currently Amended) A processing network as in claim 17, further comprising a control processing unit for running a plurality of activities, a scheduler of activities and at least one peripheral device for setting at least one control variable in said, in which

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C1  
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~~said scheduler comprises an integrating circuit in accordance with claim 1 and in which the scheduler further includes means for setting at these control variables comprising a "stim-wait" channel in response to a signal received from said peripheral device.~~

19. (Currently Amended) A multiprocessor network comprising a plurality of ~~central processing units~~ processors, each being ~~responsive to an activity scheduler as in claim 22, wherein the activity schedulers are linked together to an associated scheduler~~ and each scheduler being linked to adjacent schedulers in which each of said schedulers ~~comprises an integrating circuit in accordance with claim 1.~~

20. (Cancelled)

21. (Cancelled)

22. (New) An activity scheduler arranged to control activities in a processor, comprising:  
an integrated circuit to support data and multi-tasking for the processor,  
the integrated circuit being configured to support a control node mechanism comprising a set of stim-wait channels,  
each stim-wait channel incorporating holding means to hold a pair of control variables for one of said activities, and

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the integrated circuit further incorporating next activity logic to identify each activity that is ready to run on the processor.

23. (New) An activity scheduler arranged to control activities in a plurality of processors, comprising:

a separate integrated circuit to support shared data and multi-tasking for each of said processors,

each integrated circuit being configured to support a control node mechanism comprising a set of stim-wait channels,

each stim-wait channel incorporating holding means to hold a pair of control variables for one of said activities, and

each of said separate integrated circuits further incorporating next activity logic to identify each activity that is ready to run on the associated processor.

24. (New) An activity scheduler arranged directly to support shared data and multi-tasking in a network of processors, comprising:

a separate integrated circuit to support each of said processors,

each integrated circuit being configured to control a control node mechanism comprising a set of stim-wait channels,

each stim-wait channel incorporating holding means to hold a pair of control variables for one of said activities, and

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each of said separate integrated circuits further incorporating next activity logic to identify each activity that is ready to run on the associated processor.

25. (New) An activity scheduler, as in Claim 24, in which at least one of said processors is arranged to set at least one control variable in one of said separate integrated circuits.

26. (New) An activity scheduler, as in Claim 24, including a peripheral device arranged to set at least one control variable in one of said separate integrated circuits.

27. (New) An activity scheduler, as in Claim 24, in which at least one of said separate integrated circuits is arranged to set at least one control variable in another of said separate integrated circuits.

28. (New) An activity scheduler, as in Claim 24, in which at least one control node mechanism has its set of stim-wait channels arranged as an array comprising  $n$  rows and  $m$  columns, and at least one of said separate integrated circuits is configured to support said array of control node mechanisms.

29. (New) An activity scheduler, as in Claim 24, in which the control variables are Boolean.

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30. (New) An activity scheduler, as in Claim 24, including inhibitor means operable to inhibit any changes to control variables from entering the next activity selection logic.

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31. (New) An activity scheduler, as in Claim 24, incorporating decoding and encoding logic to identify one or more of said activities and to route signals from said activity scheduler to the appropriate stim-wait channel.

32. (New) An activity scheduler, as in Claim 24, including activity selection means operable to select the next activity on a round robin basis.

33. (New) An activity scheduler, as in Claim 24, including priority selection means to allocate different priorities to groups of activities and to select the next of said activities within a group on a round robin basis within that group.

✓ 34. (New) An activity scheduler, as in Claim 24, including a priority detector to detect an activity having a priority higher than the priority of an activity being processed on one of said processors, the priority detector being arranged to generate an interrupt signal to interrupt processing of the lower priority activity in favour of the higher priority activity.



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35. (New) An activity scheduler, as in Claim 22, in which the control variables are Boolean.

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36. (New) A method of controlling activities in a processor comprising holding a pair of control variables in respect of each activity, identifying the next activity to be run on the processor, and selecting the pair of control variables associated with the said next activity.

37. (New) A method of controlling activities in a plurality of processors comprising holding a pair of control variables in respect of each activity in each processor, identifying the next activity to be run on each processor, and selecting the pairs of control variables associated with the next activity of each processor.

38. (New) A processing network responsive to an activity scheduler as in claim 23.

39. (New) A processing network responsive to an activity scheduler as in claim 2.

40. (New) A processing network as in claim 38, further comprising at least one peripheral device for setting at least one control-variable in said integrating circuit.

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Bl  
41. (New) A processing network as in claim 39, further comprising at least one peripheral device for setting at least one control-variable in said integrating circuit.

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